

LONG-EARED OWL

Asio otus

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Management Status: Federal: None
California: Species of Special Concern

General Distribution:

This medium-sized owl occurs across many portions of the temperate zone of the Northern Hemisphere (Marks et al., 1994; Voous, 1988). In North America it is found across central Canada southward, across the northeastern United States and within most of the western United States. The species' occurrence in desert areas of the southwest is probably limited by the availability of appropriate roosting and nesting habitat, but where this occurs, the species is not rare (Garrett and Dunn, 1981).

Within most of California the species' status is poorly known. It appears to occur most regularly in desert areas, but this may be a function of greater detectability rather than of any different status in more mesic habitats. In Europe and other areas of its range, this species appears to vary cyclically in abundance, in synchrony with strong population cycles in its prey species, especially voles (Voous, 1988). However in North America this pattern is largely absent, and winter irruptions in North America are also weak (Marks et al., 1994). This may indicate adaptability in diet or energetic requirements. Moderate winter influxes in California occur most strongly or at least conspicuously in desert areas (Garrett and Dunn, 1981; Barrows, 1989). The species does not usually occur at elevations over about 5900 feet (1800 meters) except as a transient, though there are a few high elevation nest records in California (Garrett and Dunn, 1981; Gaines, 1988).

Distribution in the West Mojave Planning Area:

There is no clear geographic pattern to this species' distribution within and near the WMPA. Most records are from southern portions of the WMPA, but this could easily be a function of the distribution of suitable habitat and of observers. While there is clearly some winter influx (Garrett and Dunn 1981), it is not clear whether the majority of birds are winter visitors. Most of the 20 records compiled for this report (at least 14 locales) appear to be breeding or possible breeding records. There is no direct information on whether breeding birds are resident, although at least most of the well-known breeding areas have winter records as well. Bent (1938) reports visiting a, "small nesting colony [in] . . . an extensive tract of cottonwoods and willows along the Mojave River" which was "around Victorville." No date was given, but he was told that at least four nesting pairs were present the year before (not mapped for the current work).

Natural History:

There have been few thorough studies of the ecology or population biology of Long-eared Owls in California. Useful studies in southern California or adjacent desert areas include Barrows (1989), Bloom (1994), Brown (1995), Marti et al. (1986), and Stophlet (1959). Most of these

studies emphasize diet, and none examine either breeding productivity over multiple years or issues of human disturbance. Away from desert areas, this species is probably best-studied within North America in Idaho (e.g., Craig and Trost, 1979; Marks and Yensen, 1980; Marks, 1984; Thurow and White, 1984; Craig et al., 1985). Information on the species' biology has been compiled in Marks et al. (1994), and a useful review of 42 ecological studies for this species is given in Holt (1997).

As in most raptorial birds, male Long-eared Owls average smaller than females. Average mass in males is 8.6 oz. (245.3 g.; n=38) with females 14% greater; average wing-length in males is 11.06 in. (281 mm.; n=47) with females 1% greater (Earhart and Johnson, 1970). This places the species near the middle of the range in size of North American owls. Marks et al. (1994) states that, "[The] North American longevity record of 9 yr. (Clapp et al., 1983) [is] likely an underestimate given the small number of recoveries (n=98). No information on annual survivorship of adults in North America." The longevity record in Europe is 27 yr. (Rydzewski, 1978, cited in Cramp, 1985).

The following nesting biology information is from Marks et al. (1994) unless stated otherwise. Long-eared Owls are monogamous as a rule, but there is no evidence that pair bonds last beyond a single nesting cycle. There is no evidence that this owl does any nest construction, instead using (and occasionally usurping) nests of appropriate size, especially those of Common Raven (*Corvus corax*), American Crow (*Corvus brachyrhynchos*), Black-billed Magpie (*Pica pica*), and Cooper's Hawk (*Accipiter cooperii*). First clutches are laid from mid-March to mid-May in Idaho (Marks, 1986). Extent of the breeding season in coastal southern California (Ventura County to San Diego County) extends from early February through mid-May (n=133; Kiff and Irwin, 1987). There is no known instance of two separate broods fledged by a single pair in one year, but renesting in response to failure is common. Clutch size averages 4.5 eggs in North America (n = 393; Murray, 1976). Young birds leave the nest April through June, and typically leave the natal nest grove at 9.5 -11 weeks, often departing abruptly and traveling long distances.

This is one of the most strictly nocturnal of all owls. Very occasional vocalizations or hunting to support young occur before sunset, especially on overcast days and during breeding activities. This temporal pattern may be due to either prey activity cycles, predation avoidance (see Threats Analysis), or both. Food is typically a broad variety of mammals below 3.5 oz. (100 g) in mass, with mean mass estimated at 0.88-1.58 oz. (25-45 g.) in various studies (see Marks et al., 1994). In many areas voles (*Microtus* spp.) are dominant in the diet, but among studies in arid areas the most usual prey items are pocket mice (*Perognathus* spp.) and/or kangaroo rats (*Dipodomys* spp.), as summarized in Marks et al. (1994); this was confirmed by Barrows (1989) in a study of pellets at six locations in the Colorado Desert of California. Shifts in diet among years within sites may indicate that Long-eared Owls are responsive to prey availability (Barrows 1989).

Based on small sample sizes males, but not females, appear to show natal philopatry (i.e., returning initially to breed near where born; Marks 1985), while both sexes show very low rates of fidelity to subsequent breeding and wintering home ranges (Ulmschneider 1993, cited in Marks et al. 1994). Home ranges do not appear to be well-defined. Five owls radio-tagged in the Netherlands had a mean home range of 7.78 square mi. (2025 ha.) in winter, though 90% of use was in areas of 1.35-2.70 square mi. (350 - 700 ha.; Wijnandts 1984, cited in Marks et al. 1994). Similarly in another study, 2 breeding pairs each used core areas within 0.62 mi. (1 km.) of the

nest over a period of 8-9 days, with occasional forays up to 1.86 mi. (3 km.; Craig et al., 1988). There is no evidence of territories in which the birds exclude conspecifics, and in fact the species is often described as “vaguely” or “somewhat” colonial during nesting (e.g., Bent, 1938).

Habitat Requirements:

Grinnell and Miller (1944) describes the habitat as, “typically, bottomlands grown to tall willows and cottonwoods; but also, west of Sierran divides, belts of live oaks, especially as paralleling stream courses. Adjacent open land productive of mice is requisite, as also presence of old nests of crows, hawks or magpies for breeding purposes. Indeed, east of Sierra Nevada, the breeding range of this owl is suggestively coincident with that of the Black-billed Magpie.” Marks et al. (1994) describe habitat as, “dense vegetation adjacent to grasslands or shrublands; also open forests. Elevations range from near sea level to >2000 m. Reports of forests as main habitat (e.g., Bent, 1938; AOU, 1983; Johnsgard, 1988; Sibley and Monroe, 1990) [is] misleading in that Long-eared Owls normally use these habitats for nesting and roosting only.”

In xeric areas, the species is often reported roosting and/or nesting in willows (*Salix* spp.), cottonwoods (*Populus* spp.), and junipers (*Juniperus* spp.; Marks et al., 1994). Garrett and Dunn (1981) mention native oaks (*Quercus* spp.) in desert mountains, as well as dense plantings in desert areas of tamarisk (*Tamarix* spp.), elms (*Ulmus* spp.), cottonwoods, and conifers. In the Colorado Desert, Barrows (1989) noted the species in naturally occurring California Fan Palms (*Washingtonia filifera*).

Because the species appears to be relatively adaptable in prey selection (see above), habitat, human disturbance, and predation may be the primary factors determining where Long-eared Owls occur on a local scale. There is anecdotal evidence that Long-eared Owls avoid Great Horned Owls (*Bubo virginianus*) in coastal southern California, both in site selection and in behavior (Bloom, 1994; W.E. Haas, personal communication). In desert areas the species frequently occurs in artificial plantings near structures, indicating considerable tolerance of human disturbance. In contrast, Bloom (1994), speaking about coastal California, noted that, “I have never found an active Long-eared Owl nest within 1 km [0.62 mi.] of a residential area in California.” Another researcher in that area has stated that the species sometimes occurs near rural residences, but not close to developed areas (W.E. Haas, personal communication).

Population Status:

Currently available data or conclusions on status within the WMPA include anecdotal reports by many observers, but no quantitative work (see Distribution in the WMPA, and Population Status, above). Population summaries in Marti and Marks (1989) report the species as “rare” and “decreasing” in California, but make no distinction between coastal and desert populations. They state in text that, “Although Long-eared Owls have declined in California, the current trend is unknown (G. Gould, pers. comm.).” Based on existing data it appears that the total number is greater in winter than summer in the WMPA, but without focused efforts, status must be regarded as very poorly known.

Threats Analysis:

Threats to Long-eared Owl within the WMPA have not been formally studied. Direct persecution (e.g., shooting) and environmental toxins (e.g., pesticides and poisoned prey) do not appear to be substantial problems in North America (Marks et al. 1994). In the WMPA, likely

potential threats are habitat degradation and disturbance at nest and roost areas. Degradation of habitat can consist of loss or degradation of riparian woodlands and isolated tree groves (including fan palm oases), but perhaps just as serious (though less obvious) may be degradation of adjacent open foraging habitat through grazing, erosion, off-road vehicle use, or human development including agriculture. While artificially planted trees may provide an alternative for lost natural roost sites, the prey base is may often be poor and/or variable, disturbance may lower productivity, and potential changes in landscaping or land use remove any assurance of future availability at most such sites. As noted at Antelope Valley ranchyards, “abandonment of alfalfa farming and subsequent abandonment of ranchyards lead to death of trees and loss of nesting sites” (K.L. Garrett, pers. comm.).

While there may be some immediate benefit to Long-eared Owls from the increasing numbers of Common Ravens in desert areas (Boarman and Berry, 1995) due to increased nest availability, nest predation on owls is probably also increased by these same species, especially at sites with human disturbance (see Marks et al., 1994 for examples). Another species benefiting from human development is Great Horned Owl (Garrett and Dunn 1981), which is a known and potentially a major predator of Long-eared Owls (Marks et al., 1994; Bloom, 1994). As noted in the Antelope Valley, “There has been an increase in Great Horned Owls in the Antelope Valley and simultaneous decrease in Barn Owls; if [this is] causative, then [the] Great Horned Owl increase might be implicated in [a] Long-eared Owl decrease” (K.L. Garrett, pers. comm.). Other raptors are also known to predate this species (e.g., Collins, 1962), but probably do so uncommonly or rarely.

Biological Standards:

Population structure, size and trends in the WMPA are unknown for either breeding or wintering populations. Undoubtedly those birds present in the WMPA are part of a larger metapopulation, which may encompass most of North America, as birds are known to disperse and migrate long distances, and appear to have low nest site and winter site fidelity (Marks et al., 1994).

Minimum management requirements in the WMPA should include the following four steps: (1) prohibit, or limit and monitor, use of biocides or other toxins as well as shooting or trapping for pest control in all potentially occupied roosting or foraging habitat and (just as importantly) in adjacent open areas where the species could potentially forage, to a radius from roosts and nests of at least 4900 feet (2.7 square miles, or 700 hectares, the 90% use area defined by Wijnandts 1984, cited in Marks et al., 1994); (2) require surveys for this species in all areas of potential habitat prior to undergoing any planned change or increased disturbance (e.g., road or other construction, changing land use such as grazing); (3) limit disturbance, including off-road vehicle use and heavy foot traffic, in areas of potential habitat (especially fan palm oases and dense woodland); (4) either avoid removal of dense stands of trees (including non-native trees) or replace them through restoration of appropriately dense natives, as such sites may be occupied by Long-eared Owls at times of year other than when examined, or may become occupied in the future; and (5) maintain an ongoing database of sensitive species information for the WMPA, made available upon request by researchers.

In the short term, the primary conservation needs for the Long-eared Owl in the WMPA are to halt and/or offset both ongoing and future degradation of roosting, nesting, and foraging habitat as a result of land management decisions. In the longer term, it is vital to protect and

manage the species' habitat through acquisition of sound information as a basis for sound land management decisions. An example is research helpful in evaluating the influence of increases in Common Ravens in desert areas (Boarman and Berry 1995) on Long-eared Owl populations. These birds provide nest sites, but may also predate owl nests.

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